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THE MILITARY VALUE OF THE SHIP-YARD.

BY LEWIS NIXON.

REBUILDING of the Navy is the most important national enterprise of this generation. The first practical steps towards it were taken by the Administration of President Arthur fifteen years ago. Since that time steady progress has been made, and has now reached a stage which, including ships building, puts us at least sixth in rank among naval powers. Beginning with the act authorizing completion of the "Miantonomoh" and including among the provisions for increase of the Navy the cost of the gun-factory at the national capital, one hundred and eleven millions of dollars have been appropriated for naval rehabilitation. No similar expenditure in the history of the government has produced such gratifying results, or met so pressing a need. But this expenditure has not only founded a new navy; it has also stimulated development of our industrial resources, particularly in the production of steel, which all agree would have been impossible under ordinary commercial conditions.

When the first ships were authorized, the country had no facilities for making heavy steel forgings for machinery or for armor. The turrets of the "Miantonomoh" and shafts for several of the earlier cruisers were purchased abroad. At the present time the forging facilities of this country are not excelled, if indeed equalled, elsewhere. This forms an element of national defence, and a guarantee of national independence, hardly second in importance to the new fleet itself. But the end is by no means reached yet. The naval rank of the United States, due to the extent and character of the fleet already provided, is not yet suitable to her general rank among the nations of the world, nor are their naval resources adequate to the effective protection of their extended and exposed coast lines, which

front two oceans under geographical conditions forbidding easy or prompt co-operation between them by water, and therefore require two separate defensive naval forces each able to protect its own coast.

From the authorization of the "Chicago," "Boston," "Atlanta," and "Dolphin" to the present time the appropriations for "Increase of the Navy" have been as follows :

Total appropriations for the first four ships.....	\$4,308,694
For increase of the Navy, Act of March 3, 1885.....	1,895,000
" " " " " " August 3, 1886.....	3,500,000
" " " " " " March 3, 1887.....	11,048,362
" " " " " " September 7, 1888.....	5,760,000
" " " " " " March 2, 1889.....	6,745,000
" " " " " " June 30, 1890.....	8,120,000
" " " " " " March 2, 1891.....	16,607,000
" " " " " " July 19, 1892.....	9,460,000
" " " " " " March 3, 1893.....	7,125,000
" " " " " " July 26, 1894.....	9,955,025
" " " " " " March 2, 1895.....	13,327,521
" " " " " " June 10, 1896.....	11,479,054
Special appropriation for nickel matte, 1890.....	1,000,000
	\$110,330,656

The direct and visible results of this expenditure are in completed ships :

Type.	Number	Total tons displacement.	Total I. H. P.
First-class battleships.....	4	42,000	44,000
Second-class battleships.....	2	13,000	17,000
Armored cruisers.....	2	17,500	36,000
Harbor defence vessels.....	6	26,000	15,500
Total armored.....	14	98,500	112,500
Protected cruisers.....	13	58,000	136,000
Cruisers.....	3	6,300	16,000
Gunboats.....	16	19,500	27,000
Special class.....	2	2,400	7,500
Total unarmored.....	34	86,200	186,500

The grand total of all types and classes available for active service, or about to become so, is 48 ships of 184,700 tons displacement and 299,000 indicated horse-power.

In addition to this effective fleet, provision has been made for five battleships, the construction of which is fairly begun, and eighteen torpedo boats, of which three are completed and fifteen in various stages of forwardness. The five battleships when completed will add say 57,500 tons of displacement and about 55,000 indicated horse-power to the armored fleet.

At this point we have stopped. On March 4, 1897, Congress, for the first time since March, 1883, adjourned without provision for further increase of the navy. A perfunctory appropriation

was made for continuing work on vessels previously authorized ; but so far as the latest three battleships are concerned—the most important part of the work in hand—the effectiveness of the appropriation for them was destroyed by an impracticable limitation on the price of armor of the present navy standard, whereby its production to meet the immediate requirements of these ships was to all intents and purposes prohibited. The excuse for stopping increase of the navy unofficially offered by the dominant party in Congress was insufficiency of revenue ; but this excuse loses its force when we consider the fact that ships authorized this year could not draw seriously upon the treasury till next year under the most favorable mechanical conditions, and the additional fact that the avowed cardinal policy of the dominant party was and is to enact laws calculated to correct the alleged insufficiency of revenue and to make those laws promptly effective. From this point of view the logical conclusion is that the policy of reconstructing the navy of the United States has been abandoned, and that to the new administration has been assigned the task of gracefully winding up its affairs.

The effect of this sudden and unexpected end of a policy hitherto universally popular, and on the whole carried out consistently and consecutively to a degree seldom witnessed in the conduct of American public affairs, was of course instantly and severely felt by the industry most directly involved, that of American shipbuilding at large. The present development of this industry—which, relatively to its condition when naval reconstruction began, represents a new growth—is, with exceptions too trifling for serious mention, the result of the encouragement afforded by the patronage of the government in the work of the new navy. The inception of this work in 1883 found a few struggling shipyards which the demands of the coasting trade had enabled to eke out a precarious and feeble existence, a condition which had continued for many years, and which is best described as a hovering between life and death. But the swift collapse of the policy in 1897 finds a number of ship-yards in the highest state of organization and equipment, upon which much capital has been lavished and vast energy expended, capable of the grandest achievements possible to the shipbuilding art ; and it has left them destitute of occupation and almost bereft of encouragement.

I by no means imply that the government owes the shipyards a living, or that for the sake of maintaining them in a high state of efficiency it should give them work the product of which it does not need. I maintain that if the government needs a navy at all—which no one in full enjoyment of sound faculty will deny—it needs a force the production of which in suitable degree must afford occupation to American ship-yards, great and small alike, for many years to come.

Disastrous as this quick and inexplicable collapse of our naval policy may be to shipbuilding, it is none the less so to the vast array of cognate and contributory industries that have been stimulated, encouraged, and developed along with it. When the new naval policy was inaugurated in 1883 we had no forges capable of producing armor, or gun or machinery forgings in modern steel; no rolling mills that could make plates or shapes suitable for modern ships or their boilers; no foundries able to turn out the classes and qualities of castings in steel, iron or bronze necessary to fulfil the specifications of any up-to-date man-of-war. In 1897 we are making the best and most massive forgings, rolling the longest, widest, and heaviest boiler and ship plates and shapes, and casting the most intricate and ponderous designs in iron, steel, and bronze ever seen. All this development is due to the demands of the new navy. With the sole exception of the “St. Louis” and “St. Paul,” no merchant vessels were built during the period under consideration whose requirements could even remotely tax this phenomenally developed and wondrously expanded capacity—and no others appear in even dim prospect.

This brings me to the point of considering the public value of private industries capable of producing war material as elements of national defence, and therefore as guarantees of national independence, wholly external to and not to be measured by purely commercial rules.

In this sense every great forge and machine shop that can make modern steel breech-loading guns of any calibre and power, or projectiles of any size or endurance, or armor of any thickness and resistance, is a national fortress or citadel, in the perpetuity and integrity of which every citizen has or should feel a patriotic interest. From the current commercial output of such an establishment under peaceful conditions the actual proprietor may reap a certain, limited, and easily calculated profit in money.

But from its capacity for material output under warlike conditions, the nation at large, and thereby every citizen unit in particular, may reap a profit in the defence alike of the integrity of the country and the possessions of the individual, at once incalculable in the denominations of currency and limitless in the boon of safety.

In this sense also every ship-yard that can build war vessels capable of sustaining the armor or using the guns and projectiles of such forges against any common enemy becomes a public shield against any and all possible foreign aggression, the value of which to the nation at large, and in the long run, cannot be computed by the formulas of trade.

Possibly the real weight of these portentous facts is more readily apparent to men conversant with the mechanical problems involved in the production of modern armaments. But it seems to me that every man of ordinary intelligence or average information on such subjects must be able to grasp the great fact that the day for quick improvisation of wooden navies or log forts armed with cast-iron guns, upon which Americans formerly relied for defence, are gone by, and that we must now accommodate ourselves, as best we may, to warlike conditions in which, to a very great extent, art has taken the place of pluck, skill the place of valor, and superior mechanism the place of the "fortune of war"! In other words, we may now translate Napoleon's maxim that "God is always on the side of the strongest battalions" and Nelson's aphorism that "the French and Spaniards can build ships, but it takes old England to build the seamen," into the comparatively tame phrase that "hereafter the fates of nations will be settled by the perfection of their machines rather than by the prowess of their heroes!"

This era of mechanical warfare has brought with it difficulties in the production of warlike material unknown to the earlier and simpler days of wooden hulls and cast-iron weapons. In those days any well-built merchant ship of suitable size and rig could be converted into an effective man-of-war by mounting cast-iron cannon on her decks and cutting ports for them through her sides. For the rest nothing was needed but the "hearts of oak" popularly supposed to beat in the bosoms of sailors. Moreover, the building of regular men-of-war in that era was itself a simple thing mechanically, the comparative facility of which may

best be illustrated by the statement that an entire ship-yard, capable of constructing ships of the line, in the days of wood and sail power, could have been equipped and organized with less capital than is invested in a single tool in use at Cramp's—the floating derrick !

Likewise, in those days, a complete foundry capable of turning out cannon and projectiles *ad libitum* could have been erected at less cost than that of the forging press at Bethlehem, which now makes only the rough forgings required for modern steel rifled breechloaders, to say nothing of the ponderous and costly plant necessary for the machining and assembling of them. And, more important than all, the cast-iron weapon of the old days could be produced and put in action in one-tenth the time and at one-fiftieth the cost required to complete the modern gun, while a thousand cast-iron cannon balls of the former period would not represent the time, cost and labor required to produce a single armor-piercing projectile of to-day. Perhaps the clearest way in which these vast changes can be indicated is by stating that the expense of firing a hundred rounds from the thirteen-inch guns of the battleship "Massachusetts" in ammunition alone would exceed the entire cost of the old "Constitution's" battery in 1812, with ammunition enough thrown in to fight all her battles !

Passing from weapons to material of construction, we find that the exactions of the new era are even more crucial. Not only has the day of improvising warships from the merchant fleet passed away, but the conditions involved in the building of regular men-of-war have been immeasurably augmented in complication and expense. Without going into tedious detail, interesting only to technical men, I will simplify the proposition by saying that each one of the 13-inch turrets of the "Massachusetts," with its two guns and all its actuating gear, cost more money, so far as construction is concerned, than the cost of the old "Constitution" entire from the time her keel was laid till she bombarded the Bashaw's Castle at Tripoli ! The cost of the whole battery of the "Massachusetts," including the armor used as gun-protection, would have built, armed, and equipped ready for battle two 120-gun three-deckers like the old "Pennsylvania" ; the cost of the side armor alone of the "Massachusetts" would have built and put in commission the "Hornet"

and "Wasp" of our little navy in 1812; and the cost of the "Massachusetts'" machinery would have provided sail power for our whole naval force at that time.

Possibly these comparisons may to the general reader be more graphic and striking than tables of figures could be. If so, they will better serve my purpose, which is simply to impress upon the public mind the practical significance of the changes that have come about and the mechanical problems which confront the producer of war material in the new era, unknown and undreamed of in the old.

In view of this vast growth of complication and expense in sea armaments, and of the infinitely enhanced tax they impose on the industry and skill of producers, it becomes manifest that the ability of the government to build its own war material must correspondingly decrease, and that therefore with every advance in the application of mechanism to warfare, the dependence of the government upon the resources of the private skill and enterprise must increase. These are the reasons why plants and organizations capable of manufacturing material and munitions of modern warfare possess a status of public importance altogether beyond and distinct from ordinary commercial and industrial considerations.

I believe that this view of the matter has found some lodgement in the American public mind. This has been indicated by the universal approval which the people gave to the earlier steps in naval reconstruction; by the popular enthusiasm with which the remarkable performances of our new ships on trial have been greeted, and by the avidity of the press for every scrap of news from day to day concerning the progress of ships building and the careers of those built.

But of late, if the temper of Congress and the tone of the press may be taken as an index of the popular feeling, interest in the new navy is on the wane. To what cause this is due need not be discussed here. Suffice it to say that the tide has turned without a good reason for its turning; and unless better counsels soon prevail, the American people will find that they have stopped half-way in the grandest and most salutary and farthest reaching of all the patriotic enterprises they have undertaken since 1776.

The foregoing *résumé* of the history of our naval reconstruc-

tion and survey of the existing situation, though incomplete perhaps in themselves, on account of the necessary limitations of space, cannot fail to derive additional interest and receive augmented significance from comparison with or contrast to the policy in like premises of a nation which has thus far been our only rival in sea commerce and our only foe in sea war—Great Britain.

In this comparison or contrast we need go no farther back than the date of our own renaissance period, say 1885. We may pass over the history of England's earlier efforts to gain the sea power by virtue of which she is now the world's monarch in commerce, in finance, in diplomacy; in every attribute of national success, ascendancy, and wealth necessarily consequent upon dominion of the ocean and ownership of the highways of mankind.

We need not go back to the dawn of her sea power in the reign of William the Third, nor trace her supreme efforts during the wars of the French Revolution and the Napoleonic epoch, when in twenty-two years she spent nearly eight billions of dollars and three-quarters of a million lives in the gigantic struggle which ended with an ocean that knew no European flag but her own, and a globe whose continents and islands never rested from the sound of *reveille* in her garrisons.

We may omit consideration of the steadfast, relentless, and unswervable policy bequeathed from one generation to another by which every resource of mind and matter, money and muscle, ambition and endeavor, skill, cunning, valor, and sacrifice has been exhausted in the one grand grasp at overwhelming sea-power alike in peace and in war, in trade and in reprisal, in traffic and in battle.

We need not recount how, when, in the days of wood, her own forests had ceased to supply ship-timber for so much as one-tenth of her needs, she imported it in the rough at a great cost, built her own ships in her own ship-yards, disdaining to buy any ship of alien build, clinging to her home shipbuilding with the grimmest of resolution and the fiercest contempt of every obstacle.

Nor need we tell how, when at last the iron ship came in course of mechanical development, she hailed it as her deliverer from impending bondage, fostered it, made it her talisman of

the future, and, yoking with it the marine engine, hitched the pair to a new Neptune's chariot of ocean conquest in which her later triumphs have almost relegated the early glories of her "wooden walls" to oblivion.

Suffice it on this point to say that from first to last English patriotism and English statecraft have steadily realized and steadfastly maintained that, while the one instrument of her supremacy is sea power, the sole foundation of sea power itself is the perpetuity of home shipbuilding; that the English ship-yard is the keystone of the arch of the British Empire.

Passing by all these stupendous facts with simple mention in paragraphs, each one of which suggests the subject of a volume, and the whole of which might be expanded into a library better worth this generation's reading than all the histories of land conquest from Tamerlane to Napoleon, we will consider merely what England has done for her sea-power during the period of our own naval reconstruction, that is since 1885.

In order that the comparison of England's naval progress with our own since 1885 may be clearly understood, it is necessary to describe the condition of each at the start. We began our new navy at zero. When the first four ships were authorized in 1883 we had a few old wooden relics which possessed names to figure in the Navy Register, and could float; but they could neither fight nor chase nor run. All they could do was to limp around the world as rotting reminiscences of a glorious past, the shame of the gallant men who had to serve on them, and the laughing-stock of the foreign navies who had to exchange courtesies with them.

It was different with England. She had in 1885 a navy equal in material to any three others, and in *personnel* probably to all others combined, in the effective, if not in the numerical sense.

But a new era in naval construction was then setting in. Improvement in guns, armor, and machinery, due mainly to the substitution of mild steel for iron as a prime material of structure, had made, or were rapidly making, the ships of the previous two decades obsolete. In this emergency England did not rest content with the supremacy of the past. On the contrary, she recognized the new conditions, adopted them, applied them to the still greater expansion of her sea-power, and set a pace of

new construction which quickly made the rest of the world lag by comparison with her strides. From 1885 to 1896, inclusive, England expended for new warships and their armament (including new breech-loading guns for some of the old ships) 97,000,000 pounds sterling in round figures (exactly £96,815,000). And Parliament in March last voted for the fiscal year beginning April 1st last 11,435,000 pounds sterling, the grand total since 1885 being 108,250,000 pounds, or the equivalent of \$541,250,000.

During the same period she has increased the *personnel* of her navy from 52,800 men in 1885 to 100,050 in 1897.

With this enormous expenditure she has built the six battleships of the "Admiral" class, the "Nile" and "Trafalgar," the "Sanspareil" (and the lost "Victoria"), special classes; the ten ships of the Naval Defense Act of 1889, the "Royal Sovereign" and "Centurion" types, the nine of the "Magnificent" and "Majestic" class, the five of the "Canopus" class, authorized last year and now under rapid construction; the "Renown," and the four authorized in the estimates just agreed to—a total of thirty-nine first-class battleships, or thirty-eight, excluding the "Victoria." The aggregate displacement of this fleet of new battleships is, roundly, 580,000 tons, and the indicated horse-power about 510,000. Of second-class battleships three have been built, and of armored cruisers nine, displacing, in the aggregate, 81,000 tons, and propelled by 96,500 horse-power. The total of all the new armored displacement is, therefore, 661,000 tons, and the total horse power 606,500.

Of vessels not armored, but with deck protection and sponsoned or shielded batteries, England has built since 1885 twenty first-class cruisers, displacing in the aggregate 202,750 tons and propelled by 319,500 horse-power; fifty-one second-class cruisers of 227,250 tons' total displacement and 456,000 aggregate horse-power; thirty third-class cruisers of 65,000 tons' displacement altogether and 173,000 collective horse-power.

Of vessels neither armored nor protected she has built since 1885 nine composite sloops and thirty gunboats, displacing in all 34,000 tons, and engined with 121,000 horse-power, and 72 vessels variously known as "torpedo-catchers," "torpedo-boat destroyers," etc., designed for very high speed—over thirty knots in some cases. These embody a total displacement of 20,000 tons and an aggregate horse-power of about 270,000, the relation

of power to displacement alone sufficiently explaining their character.

The grand total of all types and classes is 262 ships, displacing in the aggregate 1,209,400 tons and propelled by a total horse-power of 1,945,600.

This is England's increase of her navy since 1885. It is her expression of the value she places on the perpetuity of her sea-power. To all appearances it has sufficed to renew her lease of absolute autocracy on the ocean for an indefinite period, because there has been no naval increase elsewhere, putting all the other powers together, approaching the nature of a menace to it.

To comprehend the prodigious significance of this fact, it is necessary to survey the naval progress of other powers worthy of consideration in the maritime sense during the same period.

Taking the naval progress of England since 1885 as the unit, we find that of France to be as two-sevenths; that of Russia as two-elevenths; that of the United States as two-twelfths; that of Germany as two-fourteenths, and that of Italy as two-seventeenths. In other words, the naval progress of England since 1885 has been to that of France in the same period as 14 to 4; to that of Russia as 22 to 4; to that of Germany as 28 to 4; to that of Italy as 34 to 4, and to our own as 24 to 4. To avoid prolonged calculation, we will take 70 as the nearest mean common integer, and it will be seen that since 1885 England has built a new navy on modern lines which bears to the combined new navies of the rest of the world the ratio of 70 to 64.

In making this calculation I have not only taken account of the factors of displacement, armor, armament, and indicated horse-power, but I have also made an allowance of a certain percentage throughout the equations for the known and admitted superiority of the English *personnel* afloat as against all included opposing factors except the United States, and I have further allowed a percentage in favor of the superior facilities the British possess of quick mobilization of their available sea-power as compared with any probable or possible foe or coalition of foes.

In such a calculation it is not worth while to include the minor maritime nations, such as those of South America and Asia, because what navies they have are built in England, and therefore represent accretion rather than diminution in the actual English sea-power.

For the purpose of valuing the new navy of Great Britain at its full worth we should consider it by itself, assuming the navy she had in 1885 to be wiped out. From this point of view it would be in all the essentials of effective power—in its exhaustiveness of the latest appliances; in the harmonious distribution of its force among various types and classes suitable for the diverse duties devolving on such a fleet; in the careful and thoughtful adaptation of each type and class to the complementary or co-operative needs of the others; in short, as a symmetrical whole—vastly more potent than the British navy that preceded it; superior to any other single navy in the world, old and new together, and more than equal to any other two. And it must be borne in mind that vast as are the results of the past decade of British naval reconstruction there is not the slightest sign of diminution, much less discontinuance, of output in the next decade. With ten years more of the energy and achievement that have made the last ten years memorable, if the future progress of her rivals may be judged from what they have done, the naval relation of Great Britain to the rest of the world combined, in the overwhelming and untouchable ocean mastery she will then possess, will be something which it is startling to contemplate.

William L. Marcy in the state paper which announced the refusal of the United States to join in the agreement of the Paris Conference to abolish privateering, said that mastery of the sea by one power must be a greater menace to the interests of all other powers than land mastery by any power possibly could be; because, while land mastery must be limited by the conditions of land transport, sea mastery would be boundless, therefore ubiquitous on the globe and threatening to everybody everywhere. This is the actual attitude of England, and every year's accretion to her already overwhelming fleet and consequent overshadowing sea-power augments the perennial threat she holds over the rest of mankind. To accentuate this proposition let us consider a recent Berlin dispatch to the effect that the Emperor William was trying to organize a concert of continental powers for the purpose of restraining the alleged designs of England upon the independence or integrity of the Boer Republic in South Africa. Suppose this dispatch to be true, and that William should succeed in organizing his con-

tinental concert to oppose British designs in South Africa. What could he do? How could he bring any material force to bear? The proposition is farcical. The whole continent of Europe could not land one soldier in South Africa or anywhere else by sea transport against the will of England. Or, if by stealth or stratagem or by British neglect they should succeed in landing their soldier, they could never afterward supply him with three days' rations from a sea-base without England's consent. These are facts of the most stubborn kind, though everybody, except the English themselves, seems trying to evade or ignore them; the wish that things might be otherwise appearing to be father to the thought. If England wants to crush the Transvaal Republic she will do it, and she will do it simply and solely by virtue of that overmastering sea-power which is the result of her unparalleled shipbuilding.

We come now to consider the phase of England's new naval policy, which is most interesting in the mechanical and industrial sense. I have shown by simple compilation from the British naval estimates, annually voted by Parliament, that, since 1885, England has expended for increase of her navy \$541,250,000, and that this expenditure has produced a total of 1,209,400 tons of displacement and 1,945,600 indicated horse-power.

Closer examination of the successive annual naval estimates discloses the fact that in the general average 64 per cent. of the total displacement and 97 per cent. of the total indicated horse-power have been built by contract in private ship-yards and machine shops of the United Kingdom.

At the average rate of contract prices since 1885, the 64 per cent. of total displacement represents the sum of \$302,350,000, and the 97 per cent. of total indicated horse-power represents the sum of \$75,000,000, or a total sum of \$377,350,000 paid to the private ship-building and engine-building industries of Great Britain during the twelve years under consideration for hulls and machinery alone. To this must be added the sums paid for armor and gun mounts, which are all made by contract, and for materials furnished by contract to vessels built in the national dock-yards. In short, the whole sum expended by England on her new navy has gone to encourage, promote and sustain the private industries of the realm, excepting only the wages paid to the workmen on the payrolls of the dock-yards and the royal

gun factories. Examination of the British naval estimates from year to year since 1885 shows that on an average the proportion of dock-yard and gun factory wages to the total was $6\frac{3}{10}$ per cent., so that on the basis of a total expenditure of \$541,250,000 during the period under consideration, \$507,151,250 went to the credit of private industries and \$34,099,000 to the public dock-yards.

The general result is that in English practice the naval programme from year to year is adapted to the needs and capacities of the English shipbuilder, who is considered the friend and mainstay of the country; whose ship-yard, as I have already said, is recognized as the keystone of the arch of the British Empire; who is always fostered, encouraged, and promoted in all his endeavors as the chief bulwark and first line of imperial power.

Thus far I have only traced the application of British public policy and shipbuilding resource to the increase of the British navy and augmentation of the Imperial sea power in its warlike aspects. But this is by no means all. To such an extent has the shipbuilding resource of Great Britain been developed by the consistent, consecutive, and unstinted aid and promotion lavished on it through public policy that, in addition to its output for British use, vast as that has been and is, it has found time and means to build whole navies for Japan, China, Chili, Argentina, Brazil, Portugal, and some lesser states, parts of navies for Italy, Russia, Germany, Spain, Holland, Sweden and Norway—in short for every maritime power on earth except France and the United States—together with merchant fleets for every flag except our own. The aggregate of this output of English shipbuilding for foreign account is not accessible, but its net results are the further development and enrichment of her shipbuilding industry to an extent hardly second in importance to that caused by the patronage of the British government itself.

Summing up, we find that British shipbuilding has built the British Empire as we see it to-day; that, having built the empire, it maintains its integrity, asserts its supremacy, and, as compared with the feebler efforts of other powers, assures its impregnability in sea power; all this in the military sense only. If we extend our view to the commercial, industrial, and financial aspects of the resulting state of things, the contemplation becomes if possible still more astounding. British ships now carry more than seven-tenths of the world's ocean-borne commerce as a

whole, not merely in the traffic between other countries and Great Britain herself, but in the international traffic of all other countries with each other, irrespective of British ports. This is a source of absolute tribute from all nations to Great Britain amounting to nearly eight hundred millions of dollars a year, every cent of which is cash on a gold basis. And the only escape from it possible to any nation under present conditions is simply to stop trading; because, as matters stand, there can be no sea-borne commerce unless it is carried in British ships.

In estimating the commercial or, one might say, the actual money value of commanding sea-power in the hands of one nation, due account must be taken of the fact that the advance of civilization, and the progress of its acts, augment the interdependence of peoples in commerce, industry, and finance, and correspondingly lessen the possibilities of national self-containment or isolation in a ratio of almost geometrical progression. Hence the relative value of commanding sea-power, and with it monopoly of ocean carriage, as to the sum-total of human productivity grows year by year out of proportion to any other growth. The English perceive this clearly, and the marvellous energy they are now exerting seaward is simply an endeavor to compensate for their relative decline in exports, as compared with their necessary imports, by grasping more and more of the increment of common-carriage by sea. At this moment, without any traffic tolls, the balance of trade on the basis of imports and exports alone is nearly a billion dollars a year adverse to the United Kingdom. But her traffic tolls, with the banking, insurance, brokerage, and handling profits, all of which must be paid by the cargoes and passengers carried, more than even up the account sheet as a whole. From this point of view it is not an extreme stretch of the imagination to conceive a time when the British Islands will rely entirely for means of subsistence on the earnings of their merchant fleet.

In our own case the manifest destiny of future progress points with rigid finger to the sea. If we do not progress in that direction we must stand still. For the time to come, if existing conditions are perpetuated, our lot will be little better than that of producing cargoes for British ships to carry, and of earning money to pay British traffic-tolls.

LEWIS NIXON.